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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/716,302	11/18/2003	Kenichi Kawase	112857-442	6931
29175	7590	05/30/2006	EXAMINER	
BELL, BOYD & LLOYD, LLC P. O. BOX 1135 CHICAGO, IL 60690-1135			ALEJANDRO, RAYMOND	
			ART UNIT	PAPER NUMBER

1745

DATE MAILED: 05/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/716,302

Applicant(s)

KAWASE ET AL.

Examiner

Raymond Alejandro

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 18 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 November 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>02/27/04</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Priority***

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Information Disclosure Statement***

2. The information disclosure statement (IDS) submitted on 02/27/04 was considered by the examiner.

### ***Drawings***

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: 21B. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Specification***

4. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-13 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

7. Claims 1, 2 and 7 recite the limitation "the layer" in line 7 (claims 1-2) and lines 5-6 (claim 7). There is insufficient antecedent basis for this limitation in the claim. *It is noted that claims 1, 2 and 7 contain earlier recitation of "an anode active material layer" and "a layer"; thus, a subsequent recitation of "the layer" may have improper antecedent basis and it may be unclear to determine what specific layer applicant is ultimately intending to recite.*

8. Claims 5 and 10 recites the limitation "the layer" in line 1. There is insufficient antecedent basis for this limitation in the claim. *It is noted that claims 2 and 7 contain earlier recitation of "an anode active material layer" and "a layer"; thus, a subsequent recitation of "the layer" may have improper antecedent basis and it may be unclear to determine what specific layer applicant is ultimately intending to recite.*

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9. Regarding claims 4 and 9, the term "*type*" renders the claims indefinite because the claims include elements not actually disclosed (those encompassed by "*type*"), thereby rendering the scope of the claims unascertainable.

***Claim Rejections - 35 USC § 102***

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

11. Claims 1-13 are rejected under 35 U.S.C. 102(b) as being anticipated by Tsuji et al 6432579.

The present claims are directed to an anode and a battery wherein the disclosed inventive concept comprises the specific anode materials.

Concerning claims 1-3:

Tsuji et al disclose an anode for a secondary battery comprising a sintered material which contains silicon as an anode active material and a carbon material; and a base material (*the current collector*) made of a foil or mesh of conductive metal; wherein the sintered material is integrated with the base material and has a thickness in the range of 10-500  $\mu\text{m}$  (See Claim 5 and 8). Tsuji et al disclose that the silicon containing material may be silicon oxide (COL 3, lines 53-60) and the thickness thereof ranging from 10-500  $\mu\text{m}$  (COL 3, lines 21-25).

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Specifically, Tsuji et al disclose a process for producing the anode comprising: preparing an active material containing a silicon-based anode material; coating a base material (*the current collector*) made of a metal foil/mesh with the silicon-based anode material to form a coated film; and sintering the coated film, thereby integrating a sintered material of the coated film with the base material (CLAIM 1). *Thus, the examiner strenuously contends that the part of the sintered material which is integrated with the base material (the current collector) represents the anode active material layer provided on the anode current collector which is alloyed therewith; and the part of the sintered material which is not integrated with the base material (the current collector) represents the layer including silicon oxide provided over the anode active material layer.*

**Examiner's note:** *applicant's specification in the paragraph bridging pages 5-6 states that "silicon...can be cited as a material which is easily alloyed" and that "silicon can form an alloy..." at page 6, lines 23-25. Therefore, it is further contended that the silicon material of Tsuji et al inherently alloy with the base material in the form of the metal foil.*

Concerning claims 4 and 9:

Tsuji et al disclose using an anode material in the form of a composite powder including carbon material and the silicon-containing material (COL 4, lines 5-10/ COL 3, lines 22-25).

Concerning claims 5 and 10:

Tsuji et al disclose that the silicon containing material may be silicon oxide (COL 3, lines 53-60).

Concerning claims 6-8:

Tsuji et al disclose the battery comprising the anode, the cathode and the electrolyte (CLAIM 6/ COL 5, lines 47-50/ EXAMPLE 1). *Refer to the discussion of claims 1-3 supra* for additional information concerning the specific anode comprising the current collector, the alloyed anode active material layer and the silicon-containing layer.

Concerning claim 11:

Tsuji et al reveals that the electrolyte includes a solid electrolyte containing a Li-ion conductive non-aqueous electrolyte by incorporating a Li-compound (the salt) into a polymer or retaining the organic solvent containing the Li-compound dissolved therein with the polymer (COL 3, lines 33-39).

Concerning claim 12:

Tsuji et al disclose an assembled battery (COL 5, line 48) including a battery can (COL 1, lines 29-30 and lines 38-39). *This can represents the exterior member(s) housing the cathode, the anode and the electrolyte.*

Concerning claim 13:

Tsuji et al disclose the use of lithiated metal complex oxides as cathode active materials (COL 5, lines 1-5).

Thus, the present claims are fully anticipated by Tsuji et al.

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12. Claims 1-13 are rejected under 35 U.S.C. 102(e) as being anticipated by Yamamoto et al 2003/0054249.

As to claims 1-3:

Yamamoto et al exemplify in **EXAMPLE 9** a current collector 1d made of a copper foil, having an intermediate anode layer 7d consisting of Si-oxide films or a multi-layer film consisting of Si and its oxide films with a total thickness of 4  $\mu\text{m}$  (P0130). *Thus, Yamamoto et al readily envisions an anode collector comprising a plurality of layers (at least two layers).*

**Examiner's note:** *applicant's specification in the paragraph bridging pages 5-6 states that "silicon...can be cited as a material which is easily alloyed" and that "silicon can form an alloy..." at page 6, lines 23-25. Therefore, it is further contended that the silicon material of Yamamoto et al inherently alloy with the current collector in the form of the Cu-foil.*

*As to the method limitation, i.e. the vapor phase, the liquid phase or sinter, it is noted that a method limitation incorporated into a product claim does not patentable distinguish the product because what is given patentably consideration is the product itself and not the manner in which the product was made. Therefore, the patentability of a product is independent of how it was made.*

Concerning claims 4 and 9:

**Example 9** shows the use of silicon-based materials and carbon materials as negative electrode active materials (EXAMPLE 9). *Thus, a simple substance and a Si-based compound.*

As to claims 5 and 10:

Yamamoto et al exemplify in **EXAMPLE 9** the use of Si-oxide films or a multi-layer film consisting of Si and its oxide films (P0130).



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As to claims 6-8:

Yamamoto et al disclose the battery (TITLE/P0072) comprising the anode (CLAIM 1/P0067), the cathode (P0071) and the electrolyte (P0073). *Refer to the discussion of claims 1-3 supra* for additional information concerning the specific anode comprising the current collector, the alloyed anode active material layer and the silicon-containing layer.

As to claim 11:

Yamamoto et al disclose the use of a polymer electrolyte comprising a Li-salt and solvents (P0073).

As to claims 12:

Disclosed is the use of films as external members for housing the anode, the cathode and the electrolyte (P0072).

As to claim 13:

Yamamoto et al use Li-metal complex oxides as cathode active materials (P0071).

Consequently, the present claims are also fully anticipated.

***Conclusion***


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Raymond Alejandro whose telephone number is (571) 272-1282. The examiner can normally be reached on Monday-Thursday (8:00 am - 6:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Raymond Alejandro  
Primary Examiner  
Art Unit 1745

  
**RAYMOND ALEJANDRO**  
**PRIMARY EXAMINER**